## REMARKS

Claims 25-31, 34-35, 37-40, 42, 46, 50, 52-59, 61, 62, 64-67, 69-70, 73, 75, 79, 81-85, 91-93, 94, 95-97, 101, 103, 105, 108, 109, and 110 are pending, with claim 94 being the only withdrawn claim. By this amendment claims 25, 27, 52, 54, and 83 have been amended. Support for the amendments to the claims is provided, for example, by the original recitation of "at least about 40% by weight in original claim 25, and the specification at page 12 lines 15-19, and page 42, Table 2. No new matter has been introduced.

In the Disposition of Claims section of the Office Action, claim 94 is withdrawn from consideration. Pending Claims 25-31, 34-35, 37-40, 42, 46, 50, 52-59, 61, 62, 64-67, 69-70, 73, 75, 79, 81-85, 91-93, 95-97, 101, 103, 105, 108, and 109 are rejected in the present Office Action.

It appears that the election of species requirement is still maintained for: (1) durum wheat as the plasticized matrix material, (2) a probiotic neutraceutical component as an encapsulant, (3) starch as the additional matrix material, and (4) liquid encapsulant as the encapsulant form. The claims readable on the elected species are Claims 25-31, 34-35, 37-40, 42, 46, 50, 52-59, 61, 62, 64-67, 69-70, 73, 75, 79, 81-85, 91-93, 95-97, 101, 103, 105, 108, 109, and 110.

Applicants thank the Examiner for withdrawing all of the previous rejections over the references. New grounds of rejections over newly cited references have been made, the previous rejections under 35 U.S.C. 112, second paragraph have been maintained, and new grounds of rejection under 35. U.S.C. 112, first paragraph and second paragraph have been made.

THE REJECTION UNDER 35 USC 112, FIRST PARAGRAPH

Claims 31, 59, 108 and 109 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement because the claims contain subject matter which was not described in the specification in such a way as to reasonably

convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It is alleged that the specification does not provide a reasonably representative disclosure of useful polyvinyl acetate derivatives or modified starches generally, a potentially huge genus inclusive of many different compounds having widely divergent structures and functions. However, polyvinyl acetate and derivatives thereof, and modified starches are well known to those skilled in the art, as evidenced by Newton et al (USP 4,938,967) at col. 8 lines 61-65, and col. 9 lines 18-29, and Wittwer et al (USP 4,738,724) at col. 7 line 67 to col. 8 line 24. Those skilled in the art would be able to select numerous polyvinyl acetate derivatives or modified starches from known compounds which may be employed to make and use the claimed invention using the disclosure as a guide.

Reconsideration and withdrawal of the rejection is respectfully requested.

THE REJECTIONS UNDER 35 USC 112, SECOND PARAGRAPH

Claims 25-31, 34, 35, 37, 38, 42, 46, 50, 52-59, 61, 62, 64-67, 69, 70, 73, 75, 79, 82, 83, 91-93, 95-97, 108, and 109 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This rejection is respectfully traversed.

The Examiner maintains that the term "at least about" 40% is indefinite because by adding the term "at least about" it cannot be determined where the lower limit lies. According to the Examiner, the term about includes values below 40%, greater than 40% and 40%, and therefore it cannot be determined whether the claims encompass at least 35% or 39%, making the recitation of "at least about 40%" indefinite. To reduce the issues, the claims have been amended to delete the language "at least" and now recite "about 40% or more".

As indicated in MPEP 2173.05(b) the fact that claim language, including terms of degree, may not be precise, does not automatically render the claim indefinite under 35 U.S.C. 112, second paragraph. *Seattle Box Co., v. Industrial Crating & Packing, Inc.*, 731

F.2d 818, 221 USPQ 568 (Fed. Cir. 1984). Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed, in light of the specification. Clear guidance is given in the present specification to those skilled in the art to employ an effective encapsulating amount of matrix material as recited in the present specification at page 12 second full paragraph, and the working Examples give specific amounts and Table 2 at page 42 give specific ranges for amounts.

According to MPEP 2173.05(b) in determining the range encompassed by the term "about", one must consider the context of the term as it is used in the specification and claims of the application. *Ortho-McNeil Pharm., Inc. v. Caraco Pharm. Labs., Ltd.,* 476 F.3d 1321, 1326, 81 USPQ2d 1427, 1432 (Fed. Cir. 2007). One of ordinary skill in the art, in view of the specification, would be reasonably apprised of the scope of the invention.

Also, in *Amgen v. Chugai*, the court held that claims reciting "at least about" were invalid for indefiniteness where there was close prior art and there was nothing in the specification, prosecution history, or the prior art to provide any indication as to what range of specific activity is covered by the term "about." *Amgen, Inc. v. Chugai Pharmaceutical Co.,* 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991). However, for reasons as presented below, the cited references are not close prior art, and patentability of the claims over the cited references does not rest entirely upon the weight of the plasticized matrix material, and one of ordinary skill in the art would understand what is claimed, in light of the specification.

It is accordingly submitted that the rejection on the grounds that the term "at least about" is indefinite should be withdrawn.

The Examiner also maintains that the term "substantially" in claims 25, 37, 52, 64 and 83 incorporates a degree of variation that has not been defined in any limiting way and is, therefore, a relative term which renders the claim indefinite. According to the Examiner, phrases such as "homogeneous," "non-expanded" and "non-cellular" are definite phrases, and include some inherent degree of variation insofar as a perfectly "homogeneous"

composition and a perfectly "non-expanded" and "non-cellular" structure is merely an ideal, and it is unclear what modifying function the term "substantially" serves in this context. The term "substantially" makes it clear that the terms it is used in conjunction with should not be interpreted as requiring perfection or an ideal, and that variations which do not adversely affect desired release properties of the product may be included.

Again, according to MPEP 2173.05(b) the fact that claim language, including terms of degree, may not be precise, does not automatically render the claim indefinite under 35 U.S.C. 112, second paragraph. *Seattle Box Co., v. Industrial Crating & Packing, Inc.*, 731 F.2d 818, 221 USPQ 568 (Fed. Cir. 1984). Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed, in light of the specification. As stated in MPEP 2173.05(b) the term "substantially" is often used in conjunction with another term to describe a particular characteristic of the claimed invention and it is a broad term. *In re Nehrenberg*, 280 F.2d 161, 126 USPQ 383 (CCPA 1960). The court held that the limitation "to substantially increase the efficiency of the compound as a copper extractant" was definite in view of the general guidelines contained in the specification. *In re Mattison*, 509 F.2d 563, 184 USPQ 484 (CCPA 1975). The court held that the limitation "which produces substantially equal E and H plane illumination patterns" was definite because one of ordinary skill in the art would know what was meant by "substantially equal." *Andrew Corp. v. Gabriel Electronics*, 847 F.2d 819, 6 USPQ2d 2010 (Fed. Cir. 1988).

Those skilled in the art would know what is meant by substantially homogeneous mixture, substantially non-expanded, substantially non-cellular structure, and not substantially dextrinized. In addition, the present specification provides clear guidance to those skilled in the art as to mixing and extrusion conditions for obtaining a substantially homogenous mixture, to obtaining a substantially non-expanded, non-cellular structure, and avoiding substantial dextrinization of starch at, for example, page 22 line 12 to page 27 line3, and page 29 lines 9-13 where exemplary specific densities are provided, and at pages 22, 29, 30, 32, 33, and 36 where conditions for avoiding excessive dextrinization are

provided. Equipment, such as a twin screw extruder with barrel temperatures screw configuration, screw speed, and die configuration are given in detail in the specification at, for example pages 29-34, as well as in the working examples which clearly gives guidance to those skilled in the art, as to what is meant by the objected to terms.

It is accordingly submitted that the rejection on the grounds that the term "substantially" is indefinite should be withdrawn.

As to the new grounds of rejection, the Examiner rejects claims 31, 59, 108, and 109 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention because in claims 31 and 59, the term "derivative" is indefinite because it is unclear how far one can deviate from the parent compound without the "derivative" being so far removed therefrom as to be a completely different compound. It is further alleged that in claims 31, 59, 108 and 109, the term "modified starch" is indefinite because it is unclear how far one can deviate from the parent compound without the "modified" being so far removed therefrom as to be a completely different compound. However, polyvinyl acetate and derivatives thereof, and modified starches are well known to those skilled in the art, as evidenced by Newton et al (USP 4,938,967) at col. 8 lines 61-65, and col. 9 lines 18-29, and Wittwer et al (USP 4,738,724) at col. 7 line 67 to col. 8 line 24.

Reconsideration and withdrawal of the rejection is respectfully requested.

**THE REJECTION UNDER 35 U.S.C. 103**

Claims 25-31, 34, 35, 37-40, 46, 50, 52-59, 61, 62, 64-67, 73, 75, 79, 81-83, 85, 91-93, 95-97, 101, 103, 105, 108, and 109 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newton et al (U.S. Patent No. 4,938,967) in view of newly cited Wittwer et al (U.S. Patent No. 4,738,724). This rejection is respectfully traversed.

Newton et al does not teach or suggest the use of a plasticized mass comprising starch which is not substantially dextrinized, or particles where an encapsulant is dispersed

throughout the plasticized mass of each particle, as claimed in independent claims 25, 27, 52, 54, and 83, and their dependent claims.

The Examiner employs Newton et al as teaching pharmaceutical compositions. The Examiner admits that Newton et al does not disclose a plasticized matrix in the disclosed dosage forms. Newton et al employs a weighting agent to increase density beyond normal levels to thereby increase release time. The weighting agent generally is employed in an amount of at least 50% by weight of the unit, and generally has a density of at least 2.5 g/ml. The weighting agent may be a powder such as barium sulphate, ferric oxide, ferrum redactum, titanium dioxide and aluminum oxide or hydroxide, calcium carbonate, barium phosphate, bismuth phosphate, calcium aluminosilicate, zirconium silicate, calcium phosphate, silicon carbide, and magnesium carbonate. See col. 4 lines 33-52, col. 5 lines 7-9, col. 9 line 43 to col. 10 line 1. Newton et al discloses the use of a conventional matrix binder which may be a synthetic polymer or natural polymer or derivative such as starch or preferably cellulose or its derivatives. A known gastric controlled release binder may also be employed such as hydrophobic acrylic polymers or cellulose derivatives, vinyl polymers and other high molecular weight natural polymer derivatives or synthetic polymers. See col. 8 line 61 to col. 9 line 36. Each unit may comprise a homogeneous or non-homogeneous blend of the active ingredient and the weighting agent and any matrix binder component. For instance each unit may have a core of weighting agent covered by a shell of active ingredient or vice versa or it may be formed of a blend of the active ingredient and the weighting agent. See col. 10 lines 58-64. The preferred method for forming the pellets or other units is to make a mixture of the weighting agent and the active ingredient and matrix binder and then to form the mixture into the units. Generally some water is added to the mixture to aid pelletization. See col. 11 lines 34-44. Use of starch as a conventional matrix binder would result in rapid release properties, and necessitates the use of a weighting agent to increase density and increase release time in accordance with the disclosure of Newton et al.

Newton et al does not teach or suggest use of a plasticized mass comprising starch which is not substantially dextrinized, and there is no reason to do so. Furthermore, admixing a starch with the encapsulant and the weighting agent, and heating the mixture to plasticize the starch would destroy the encapsulant. There is no teaching, suggestion, or expectation that plasticizing the starch binder of Newton et al, would have a beneficial effect on the release properties of the Newton et al composition and would not destroy the encapsulant.

Wittwer et al relates to the production of pharmaceutical capsules prepared by injection molding of various starch compositions. See col. 1 lines 34-41, col. 2 lines 19-21, and col. 2 line 24 to col. 5 line 2. Wittwer et al does not cure the deficiencies in the disclosure of Newton et al, and even if the references were properly combinable, applicant's claimed invention would not be obtained nor rendered obvious. The Examiner employs Wittwer et al as teaching moldable plasticized starch matrices used to deliver active agents. The Examiner admits that Wittwer et al does not disclose the matrices are formulated into pellets or granules, the size of granules made from the compositions, or the amount of active agent in a granule. It is alleged that it is *prima facie* obvious to select a known material for incorporation into a composition, based on its recognized suitability for its intended use. The Examiner maintains that it would have been obvious to one of ordinary skill in the art to have used a plasticized starch matrix in the formulations of Newton et al motivated by the desire to use a moldable matrix comprising starch suitable for use in pharmaceutical formulations for delivering actives, as disclosed by Wittwer et al and supported by MPEP 2144.07.

However, the plasticized starches of Wittwer et al are used to make injection molded capsules which are filled with a pharmaceutical. Combining the teachings of Newton et al and Wittwer et al would yield a capsule casing of plasticized starch that is separate and distinct from any pharmaceutical pellets or units of Newton et al. The pharmaceutical pellets or units of Newton would not be dispersed throughout the plasticized starch of Wittwer et al. Combining the disclosures of the references would result in filling an

injection molded starch capsule of Wittwer et al with pellets of a pharmaceutical and weighting agent of Newton et al. Mixing of a plasticized starch with an encapsulant to disperse the encapsulant throughout the plasticized starch to obtain a substantially homogeneous mixture is not taught or suggested. In addition, Wittwer et al teaches plasticization at a temperature of between about 80-240°C which would destroy encapsulant admixed with the starch. See col. 4 lines 57-61. Accordingly, it would not have been obvious for one ordinarily skilled in the art to make the claimed encapsulated products in view of the combined teachings of Newton et al and Wittwer et al.

As to the amount of matrix material and as to the release profile recited in claims 38 and 65, the Examiner maintains that it would take no more than routine skill in the art to adjust the amount of binder in the pellets to achieve the desired active release profile including the amount of active released in an aqueous or gastric juice environment as recited in claims 38 and 65. However, Newton et al teaches that it is difficult to maintain prolonged drug availability in a chosen environment such as the stomach by choice of a binder, and that there is an urgent need to provide an entirely new mechanism by which it is possible to provide prolonged release of an active ingredient within the stomach. The mechanism employed by Newton et al is the use of a weighting agent to increase density. See col. 1 line 20 to col. 2 line 10, and col. 4 lines 33-62. Thus, contrary to the position taken by the Examiner, Newton et al teaches away from use of a binder to achieve a desired active release profile. There is no reason to modify the composition of Newton et al to change the release time as proposed by the Examiner because it is contrary to the reference's teaching.

Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 42, 69, 70, 84, and 108-110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newton et al (U.S. Patent No. 4,938,967) in view of newly cited Wittwer et al, (U.S. Patent No. 4,738,724) as applied above, in further view of Jane et al (U.S. Patent No. 5,397,834. This rejection is respectfully traversed.

The Examiner admits that Newton et al. and Wittwer et al differ from the instant claims insofar as they do not disclose the wheat used as a starch source is durum wheat. The Examiner points out that Jane et al discloses biodegradable thermoplastic components made of the reaction of a starch aldehyde with protein, that suitable starches include those derived from durum wheat, and that the reference differs from the instant claims in so far as it does not disclose the thermoplastic compositions are formulated into discrete particles comprising an active agent.

Jane et al does not cure the deficiencies in the disclosures of Newton et al and Wittwer et al discussed above, and even if it were obvious to combine the teachings of Newton et al, Wittwer et al, and Jane et al, applicant's claimed invention would not be obtained nor rendered obvious. The Examiner maintains that Newton et al and Wittwer et al differ from the instant claims insofar as they do not disclose the wheat used as a starch source is durum wheat. As discussed above, Newton et al and Wittwer et al, even if properly combinable, do not teach or suggest particles where for each particle an encapsulant is dispersed throughout a plasticized mass comprising starch which is not substantially dextrinized. Even if it were obvious to employ a starch derived from durum wheat in the product of Newton et al, which it is not, Applicant's claimed products would not be obtained nor rendered obvious.

If a starch derived from durum wheat were employed in the product of Newton et al as modified by Wittwer et al, it would be used to form a capsule in which the pellets or units of pharmaceutical and weighting agent would be filled. The encapsulant simply would not be dispersed through a plasticized mass of the starch.

Moreover, a starch which is derived from durum wheat is not the same as durum wheat which has different matrix forming properties and different release properties. Durum wheat contains gluten which forms a plasticizable starch-protein matrix, and as disclosed in the present invention, heating or cooking of durum wheat to gelatinize starch is not required. Use of starch derived from durum wheat would not include the gluten and would result in a different matrix and different release properties.

The rejection is untenable and reconsideration and withdrawal thereof is respectfully requested.

**CONCLUSION**

In light of the foregoing amendments and remarks, this application is in condition for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application.

It is not believed that any additional fees are due. However, the U.S. Patent and Trademark Office is hereby authorized to charge any fees which may be deemed necessary or to credit any overpayments to Deposit Account No. 19-0089 (P32853).

Respectfully submitted,

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